

EXHIBIT 1

3GPP TS 23.008 V15.7.0 (2019-03)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Organization of subscriber data; (Release 15)



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Keywords

UMTS, GSM, network, user, management

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Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The present document provides a mechanism giving reliable transfer of signalling messages within the 3GPP system.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

2.4.15.2 Roaming restriction due to unsupported feature

Roaming restriction due to unsupported feature is a parameter which indicates that one or several services or features are not supported by the MSC, resulting in roaming restriction in the MSC area. It can take either of the following values:

- roaming restricted;
- roaming not restricted.

The parameter governs the "LA not allowed flag" in the VLR (see subclause 2.4.13) and the "MSC area restricted flag" in the HLR (see subclause 2.4.12); see also 3GPP TS 29.002.

The flag "roaming restriction due to unsupported feature" is temporary subscriber data stored in the VLR and in the HLR.

2.4.15.3 Roaming restricted in the SGSN due to unsupported feature

Roaming restricted in the SGSN due to unsupported feature is a parameter which indicates that one or several services or features are not supported by the SGSN, resulting in roaming restriction in the SGSN area. It can take either of the following values:

- roaming restricted;
- roaming not restricted.

The parameter governs the "RA not allowed flag" in the SGSN (see subclause 2.4.14a) and the "SGSN area restricted flag" in the HLR (see subclause 2.4.14); see also 3GPP TS 29.002.

The flag "roaming restricted in the SGSN due to unsupported feature" is temporary subscriber data stored in the SGSN and in the HLR.

2.4.15.3a Roaming restricted in the MME due to unsupported feature

Roaming restricted in the MME due to unsupported feature is a parameter which indicates that one or several services or features are not supported by the MME, resulting in roaming restriction in the MME area. It can take either of the following values:

- roaming restricted;
- roaming not restricted.

The parameter governs the "TA not allowed flag" in the MME (see subclause 2.4.14b).

The flag "roaming restricted in the MME due to unsupported feature" is temporary subscriber data stored in the MME and in the HSS.

2.4.16 Cell Global ID or Service Area ID

The Cell Global ID or Service Area ID indicates the cell global identity of the cell in GSM (see 3GPP TS 23.003 [5]) or the service area identification of the service area in UMTS (see 3GPP TS 23.003 [5]) in which the MS is currently in radio contact or in which the MS was last in radio contact. The VLR and SGSN shall update the stored Cell Global ID or Service Area ID at establishment of every radio connection.

The cell ID is temporary subscriber data stored in the VLR and SGSN. It is conditional data, the VLR and SGSN shall store it whenever the subscriber data is marked as confirmed by radio contact.

The Cell Global ID or Service Area ID is temporary subscriber data stored in SGSN and GGSN/PDN-GW.

2.4.16A E-UTRAN Cell Global ID

The E-UTRAN Cell Global ID indicates the cell global identity of the cell in EPS (see 3GPP TS 23.003 [5]) in which the MS is currently in radio contact or in which the MS was last in radio contact.

The E-UTRAN Cell Global ID is temporary subscriber data stored in MME, PDN-GW and, when received via the SGs interface, in the VLR.

2.4.16B NR Cell Global Identity (NCGI)

The NR Cell Global Identity indicates the cell global identity of the cell in 5GS (see 3GPP TS 23.003 [5]) in which the UE is currently in radio contact or in which the UE was last in radio contact.

The NR Cell Global Identity is temporary subscriber data stored in AMF, SMF.

2.4.17 Localised Service Area Information

If a mobile subscriber has a localised service area subscription, the HLR shall store a list of up to 20 Localised Service Area Identities (LSA IDs) per PLMN. The structure of LSA ID is defined in 3GPP TS 23.003 [5].

On updating the VLR or the Gn/Gp-SGSN, the HLR identifies the VPLMN given by the VLR or SGSN number and transfers the applicable LSA ID List to the VLR or Gn/Gp-SGSN. The VLR or Gn/Gp-SGSN derives from the LSA ID List the allowed LSA(s), priority of each LSA, the preferential access indicator, the active mode support indicator and active mode indication and the "LSA only access" indicator.

2.4.17.1 LSA Identity

LSA Identity (LSA ID) is defined in 3GPP TS 23.003 [5]. The element uniquely identifies a LSA.

2.4.17.2 LSA Priority

Localised Service Area Priority (LSA Priority) is defined in GSM 08.08. The LSA Priority is permanent subscriber data stored conditionally in the HLR.

2.4.17.2A LSA Preferential Access Indicator

The Localised Service Area Preferential Access Indicator defines if the subscriber shall be favoured in cells belonging to the LSA at resource allocation compared to other subscribers. The LSA Preferential Access Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.2B LSA Active Mode Support Indicator

The Localised Service Area Active Mode Support Indicator defines if cells belonging to the LSA shall be favoured for the subscriber compared to other cells at resource allocation. The LSA Active Mode Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.3 LSA Only Access Indicator

The LSA Only Access Indicator defines if the subscriber is only allowed within its subscribed LSAs. The LSA Only Access Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.4 LSA Active Mode Indicator

The Localised Service Area Active Mode Indicator defines if the LSA Identity of the cell in which the MS is currently in radio contact with shall be indicated to the subscriber in active mode. The LSA Active Mode Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.5 VPLMN Identifier

The VPLMN Identifier identifies the VPLMN in which an LSA Identity is applicable. This identifier is not applicable to Universal LSA IDs as defined in 3GPP TS 23.003 [5]. The VPLMN identifier is permanent subscriber data stored conditionally in the HLR.

2.13.4 Packet Data Protocol (PDP) State

PDP State is defined in 3GPP TS 23.060 [21]. The PDP State is either ACTIVE or INACTIVE.

PDP State is temporary subscriber data and conditionally stored in SGSN.

2.13.5 New SGSN Address

New SGSN Address is defined in 3GPP TS 23.060 [21]. It is the IP-address of the new SGSN, to which N-PDUs should be forwarded from the old SGSN after an inter-SGSN routing update.

New SGSN Address is temporary subscriber data and conditionally stored in SGSN.

2.13.6 Access Point Name (APN)

Access Point Name (APN) is defined in 3GPP TS 23.003 [5] and 3GPP TS 23.060 [21] and 3GPP TS 23.401[74]. The APN field in the HLR/HSS contains either only an APN Network Identifier (i.e. an APN without APN Operator Identifier) or the wild card value (defined in 3GPP TS 23.003 [5]). APN is permanent subscriber data conditionally stored in HLR/HSS, in GGSN, SGSN, MME, S-GW, PDN and SCEF.

2.13.7 GGSN Address in Use

GGSN Address in Use is defined in 3GPP TS 23.060 [21]. It is the IP address of the GGSN currently used by a certain PDP Address of the MS.

GGSN Address is temporary subscriber data and conditionally stored in Gn/Gp-SGSN.

2.13.8 VPLMN Address Allowed

VPLMN Address Allowed is defined in 3GPP TS 23.060 [21]. It specifies per VPLMN whether the MS is allowed to use a dynamic address allocated in the VPLMN.

VPLMN Address Allowed is permanent subscriber data and conditionally stored in HLR and SGSN.

2.13.9 Dynamic Address

Dynamic Address is defined in 3GPP TS 23.060 [21]. It indicates whether the address of the MS is dynamic.

Dynamic Address is temporary subscriber data conditionally stored in GGSN.

2.13.10 SGSN Address

SGSN Address is defined in 3GPP TS 23.003 [5]. It is the IP Address of the SGSN currently serving the MS.

SGSN Address is temporary subscriber data stored in HLR and stored conditionally in GGSN. A pendant is the SGSN number, cf subclause 2.4.8.

2.13.11 GGSN-list

GGSN-list is defined in 3GPP TS 23.060 [21]. It defines the GGSNs to be contacted when activity from the MS is detected and MNRG is set. It contains the GGSN number and optionally the GGSN IP address.

GGSN-list is temporary subscriber data stored in the HLR.

2.13.12 Quality of Service Subscribed

Quality of Service Subscribed is defined in 3GPP TS 23.060 [21]. It specifies the quality of service subscribed for a certain PDP context.

2.13.35 ME Identity

The ME Identity is temporary data and contains the IMEISV see subclause 2.2.3.

2.13.36 Selected NAS Algorithm

Selected NAS security algorithm sent by MME to UE (see 3GPP TS 23.401 [74]) and is temporary data stored in MME

2.13.37 Selected AS Algorithm

Selected AS security algorithms are defined in 3GPP TS 23.401 [74] and is temporary subscriber data stored in the MME.

2.13.38 Context Identifier

Index of the PDN subscription context (see 3GPP TS 23.401 [74]) is permanent data stored in HSS and MME.

2.13.39 PDN Address

Indicates subscribed IPv4 address and/or IPv6 prefix is temporary data stored in S-GW, PDN-GW, MME, ePDG and 3GPP AAA Server, and is permanent data in HSS (static address allocation based on subscriber profile in HSS; see 3GPP TS 23.401 [74]).

2.13.40 VPLMN Address Allowed

VPLMN Address Allowed specifies per VPLMN whether for this APN the UE is allowed to use the PDN GW in the domain of the HPLMN only, or additionally the PDN GW in the domain of the VPLMN (see 3GPP TS 23.401 [74]). It is permanent data stored in HSS, and temporary data in MME, ePDG and 3GPP AAA Server.

2.13.41 PDN GW identity

PDN GW identity is the identity of the PDN GW used for this APN. The PDN GW identity may be an FQDN or an IP address. The PDN GW identity is permanent data in HSS when static assignment is used and temporary data in HSS when dynamic assignment is used. It is temporary data in MME, S4-SGSN, ePDG and 3GPP AAA Server.

2.13.42 Tracking Area List

Tracking area list contains the current list of tracking areas (see 3GPP TS 23.401 [74]) and is temporary data stored in MME.

2.13.43 APN Restriction

APN Restriction is defined in 3GPP TS 23.060 [21] for GPRS and in 3GPP TS 23.401 [74] for EPS. It is temporary data stored in MME, SGSN and S-GW and contains the maximum restriction for each PDP context/EPS Bearer Context.

2.13.44 APN in use

APN in use contains the APN (see 2.13.6) currently in use (see 3GPP TS 23.401 [74], 3GPP TS 23.060 [21] and 3GPP TS 23.402 [77]) and it is temporary data stored in S4-SGSN, MME, S-GW, ePDG and PDN-GW.

2.13.45 TAI

TAI of the TA in which the last Tracking Area Update was initiated and is temporary data stored in MME, AMF and SMF and, when received via the SGs interface, in the VLR it contains the TAI of the last received E-UTRAN Cell Global ID.

EPS Bearer ID is temporary data stored in MME, S4 SGSN, S-GW, ePDG(for GTP-based S2b only) and PDN-GW for each EPS Bearer or S2b bearer within the PDN connection see 3GPP TS 23.401[74], 3GPP TS 23.060 [21] and 3GPP TS 23.402 [77].

When EPS Bearer ID identifies a T6a connection, EPS Bearer ID is temporary data stored in the MME and in the SCEF, see 3GPP TS 29.128 [106].

2.13.67 EPS Bearer QoS

EPS Bearer QoS contains QCI and ARP and optionally: GBR and MBR in case of GBR bearer. ARP contains a priority level, the preemption capability and the preemption vulnerability. EPS Bearer QoS is temporary data stored in MME, S4 SGSN, S-GW, ePDG(for GTP-based S2b only) and PDN-GW for each EPS Bearer within the PDN connection; see 3GPP TS 23.401 [74] , 3GPP TS 23.060 [21] and 3GPP TS 23.402 [77].

2.13.67A EPS Subscribed QoS Profile

EPS Subscribed QoS Profile contains QoS parameters (QCI and ARP) for the EPS default bearer of an APN, and it is permanent data stored in HSS, MME and S4-SGSN.

The QCI values allowed for the EPS Subscribed QoS Profile shall be only those associated to non-GBR bearers.

2.13.68 UL TFT

Uplink Traffic Flow Template for each EPS Bearer or S2b bearer within the PDN connection see 3GPP TS 23.401[74] and 3GPP TS 23.402 [77], and is temporary data stored in S-GW (for PMIP-based S5/S8 only), PDN-GW and ePDG (for GTP-based S2b only).

2.13.69 DL TFT

Downlink Traffic Flow Template for each EPS Bearer or S2b bearer within the PDN connection see 3GPP TS 23.401[74] and 3GPP TS 23.402 [77], and is temporary data stored in S-GW (for PMIP-based S5/S8 only) and PDN-GW.

2.13.70 Charging Id

Charging Id is defined in 3GPP TS 32.298[76] and temporary data conditionally stored in PDN-GW and S-GW for each EPS Bearer within the PDN connection see 3GPP TS 23.401[74].

2.13.71 EPS PDN Connection Charging Characteristics

EPS PDN Connection Charging Characteristics are defined in 3GPP TS 32.251[84] as permanent subscriber data conditionally stored in the HSS, 3GPP AAA Server and temporary data conditionally stored in MME, S-GW, ePDG and PDN-GW for each PDN connection see 3GPP TS 23.401[74] and 3GPP TS 23.402 [77].

2.13.72 Default bearer

Default bearer Identifies the EPS Bearer Id of the default bearer within the given PDN connection (see 3GPP TS 23.401[74] , 3GPP TS 23.060 [21] and 3GPP TS 23.402 [77]) and is temporary data stored in MME , S4 SGSN, S-GW, ePDG (for GTP-based S2b only) and PGW.

5.2A PS Network Access Mode Storage (EPS)

Table 5.2A-1: Overview of data used for PS Network Access Mode (EPS 3GPP access)

PARAMETER	Subclause	HSS	VLR (see note3)	S4- SGSN	MME	S-GW	PDN- GW	TYPE
IMSI	2.1.1.1	M	C	C	C	C	C	P
Network Access Mode	2.1.1.2	M	-	-	C (see note 1)	-	-	P
IMSI Unauthenticated indicator	2.1.1.3	-	-	C	C	C	C	T
International MS ISDN number	2.1.2	C	-	C	C	C	C	P
P-TMSI	2.1.5	-	-	C	-	-	-	T
TLLI	2.1.6	-	-	C	-	-	-	T
Random TLLI	2.1.7	-	-	C	-	-	-	T
IMEI	2.1.9	C	-	C	C	C	C	T
External Identifier Set	2.1.10	C	-	-	-	-	-	P
IMEISV	2.2.3	C	-	C	C	C	C	T
RAND/SRES and Kc	2.3.1	-	-	C	-	-	-	T
RAND, XRES, CK, IK, AUTN	2.3.2	M	-	C	C	-	-	T
RAND, XRES, KASME, AUTN	2.3.2	M	-	-	C	-	-	T
Ciphering Key Sequence Number	2.3.3	C	-	M	-	-	-	T
Key Set Identifier (KSI)	2.3.4	-	-	M	-	-	-	T
KSI _{KASME}	2.3.4	-	-	-	M	-	-	T
Selected Ciphering Algorithm	2.3.5	-	-	M	-	-	-	T
Current Kc	2.3.6	-	-	M	-	-	-	T
P-TMSI Signature	2.3.7	-	-	C	-	-	-	T
Key Status	2.3.9	-	-	C	-	-	-	T
Routing Area Identity	2.4.3	-	-	M	-	-	-	T
IWF number	2.4.8.3	C	-	-	-	-	-	T
RSZI Lists	2.4.11.1	C	-	-	-	-	-	P
Zone Code List	2.4.11.2	-	-	C	C	-	-	P
SGSN area restricted Flag	2.4.14	M	-	-	-	-	-	T
RA not allowed flag	2.4.14a	-	-	M	-	-	-	T
TA not allowed flag	2.4.14b	-	-	-	M	-	-	T
Roaming Restricted in the SGSN due to unsupported feature	2.4.15.3	M	-	M	-	-	-	T
Roaming Restricted in the MME due to unsupported feature	2.4.15.3a	M	-	-	M	-	-	T
Cell Global Identity or Service Area ID	2.4.16	-	-	C	C	-	C	T
E-UTRAN Cell Global ID	2.4.16A	-	C (see note 2)	-	C	-	C	T
Access Restriction Data	2.4.18	C	-	C	C	-	-	P
Closed Subscriber Group Information	2.4.22	C	C	C	C	-	-	P
Confirmed by Radio Contact indicator	2.7.4.1	-	C	-	-	-	-	T
Subscriber Data Confirmed by HLR/HSS Indicator	2.7.4.2	-	-	M	M	-	-	T
Location Info Confirmed by HLR/HSS Indicator	2.7.4.3	-	-	M	M	-	-	T
VLR-Reliable Indicator	2.7.4.5	-	-	C(see note 5)	C (see note 2)	-	-	T
UE purged in SGSN flag	2.7.6	M	-	-	-	-	-	T
UE purged in MME flag	2.7.6A	M	-	-	-	-	-	T
URRP-MME	2.7.9.1	C	-	-	C	-	-	T
URRP-SGSN	2.7.9.2	C	-	C	-	-	-	T
Subscriber Status	2.8.1	C	-	C	C	-	-	P
Barring of outgoing calls	2.8.2.1	C	-	C	-	-	-	P
Barring of roaming	2.8.2.3	C	-	-	-	-	-	P

PARAMETER	Subclause	HSS	VLR (see note3)	S4- SGSN	MME	S-GW	PDN- GW	TYPE
Barring of Packet Oriented Services	2.8.2.8	C	-	C	C	-	-	P
ODB PLMN-specific data	2.8.3	C	-	C	-	-	-	P
PS and SMS Only	2.10.7	C	-	C	-	-	-	P
SMS in SGSN Allowed	2.10.8	C	-	C	-	-	-	P
Trace Activated in SGSN	2.11.7	C	-	C	-	-	-	P
Trace Reference 2	2.11.9	C	C	C	C	C	C	P
Trace depth	2.11.10	C	C	C	C	C	C	P
List of NE types to trace	2.11.11	C	C	C	C	-	-	P
Triggering events	2.11.12	C	C	C	C	C	C	P
List of interfaces to trace	2.11.13	C	C	C	C	C	C	P
IP address of trace collection entity	2.11.14	C	C	C	C	C	C	P
MDT-Configuration	2.11.15	C	C	C	C	-	-	P
MDT User Consent	2.11.16	C	C	C	C	-	-	P
Access Point Name (APN).	2.13.6	M	-	M	M	M	M	P
MME name	2.13.26	M	C	-	-	-	-	T
VLR name	2.13.27	-	-	-	C (see note 2)	-	-	T
NEAF	2.13.28	-	-	-	C (see note 2)	-	-	T
UE level APN-OI-Replacement	2.13.29	C	-	-	C	-	-	P
Subscribed UE-AMBR	2.13.30	M	-	M	M	-	-	P
Used UE-AMBR	2.13.30A	-	-	C	C	-	-	T
APN-Configuration-Profile	2.13.31	M	-	M	M	-	-	P
Subscribed APN-AMBR	2.13.32	M	-	M	M	M	-	P
Used APN-AMBR	2.13.32A	-	-	C	C	-	C	T
Subscribed-RFSP-ID	2.13.33	C	-	-	C	-	-	P
GUTI	2.13.34	-	-	-	C	-	-	T
ME identity (IMEISV)	2.13.35	C	-	C	C	C	C	T
Selected NAS Algorithm	2.13.36	-	-	-	M	-	-	T
Selected AS Algorithm	2.13.37	-	-	-	M	-	-	T
Context Identifier	2.13.38	M	-	M	M	M	M	P
PDN Address	2.13.39	C	-	C	C	C	C	P/T (see note4)
VPLMN Address Allowed	2.13.40	M	-	M	M	-	-	P
PDN GW identity	2.13.41	C	-	C (see note 6)	C (see note 6)	-	-	P/T (see note4)
Tracking Area List	2.13.42	-	-	-	M	-	-	T
APN Restriction	2.13.43	-	-	C	C	C	C	P
APN in use	2.13.44	-	-	M	M	M	M	T
TAI	2.13.45	-	C (see note 2)	-	M	-	-	T
E-UTRAN Cell Identity Age	2.13.46	-	C (see note 2)	-	C	-	-	T
MME F-TEID for S11 (control plane)	2.13.47	-	-	-	C	C	-	T
MME UE S1AP ID	2.13.48	-	-	-	C	-	-	T
S-GW F-TEID for S11 (control plane)	2.13.49	-	-	-	C	C	-	T
S4-SGSN F-TEID for S4 (control plane)	2.13.50	-	-	C	-	-	-	T
S4-SGSN F-TEID for S4 (User plane)	2.13.51	-	-	C	-	-	-	T
S-GW F-TEID for S5/S8 (control plane)	2.13.52	-	-	-	C	C	C	T

PARAMETER	Subclause	HSS	VLR (see note3)	S4- SGSN	MME	S-GW	PDN- GW	TYPE
S-GW F-TEID for S1-U	2.13.53	-	-	-	C	C	-	T
S-GW F-TEID for S5/S8 (user plane)	2.13.54	-	-	-	-	C	C	T
eNodeB Address	2.13.55	-	-	-	C	-	-	T
eNodeB UE S1AP ID	2.13.56	-	-	-	C	-	-	T
eNodeB F-TEID for S1-U	2.13.57	-	-	-	C	C	-	T
E-UTRAN/UTRAN Key Set flag	2.13.58	-	-	-	C	-	-	T
Selected CN operator id	2.13.59	-	-	-	C	-	-	T
UE Radio Access Capability	2.13.60	-	-	-	C	-	-	T
Location Change Report Required	2.13.62	-	-	C	C	-	-	T
UE specific DRX parameters	2.13.63	-	-	-	C	-	-	T
PDN GW F-TEID for S5/S8 (user plane)	2.13.64	-	-	C	C	C	C	T
PDN GW F-TEID for S5/S8 (control plane)	2.13.65	-	-	C	C	C	C	T
EPS Bearer ID	2.13.66	-	-	C	C	C	C	T
EPS Bearer QoS	2.13.67	-	-	C	C	C	C	T
EPS Subscribed QoS Profile	2.13.67A	M	-	M	M	-	-	P
UL TFT	2.13.68	-	-	-	C	C	C	T
DL TFT	2.13.69	-	-	-	C	C	C	T
Charging Id	2.13.70	-	-	C	-	C	C	T
EPS PDN Connection Charging Characteristics	2.13.71	C	-	C	C	C	C	P
Default bearer	2.13.72	-	-	-	C	C	C	T
URRP-MME	2.13.73	C	-	-	C	-	-	T
RAT Type (Access Type)	2.13.75	C	-	C	C	C	C	T
Diameter Server Identity of the HSS	2.13.99	-	-	C	C	-	-	T
SGSN name	2.13.100	M	-	-	-	-	-	T
S-GW F-TEID for S12	2.13.101	-	-	-	-	C	-	T
RNC F-TEID for S12	2.13.102	-	-	C	-	C	-	T
MME F-TEID for S3	2.13.103	-	-	C	C	-	-	T
S4-SGSN F-TEID for S3	2.13.104	-	-	C	C	-	-	T
PDN GW Allocation Type	2.13.105	M	-	-	M	-	-	P
S-GW F-TEID for S4 (control plane)	2.13.106	-	-	C	-	C	-	T
S-GW F-TEID for S4 (user plane)	2.13.107	-	-	C	-	C	-	T
RFSP-ID in Use	2.13.108	-	-	C	C	-	-	T
APN level APN-OI-Replacement	2.13.109	C	-	C	C	-	-	P
PDN Connection ID	2.13.111	-	-	-	-	C	C	T
MS Network Capability	2.13.112	-	-	C	C	-	-	T
Voice Domain Preference and UE's Usage Setting	2.13.113	-	-	C	C	-	-	T
SIPTO Permission	2.13.114	C	-	C	C	-	-	P
SIPTO Local Network Permission	2.13.114A	C	-	C	C	-	-	P
Subscribed Periodic RAU/TAU Timer	2.13.115	C	-	C	C	-	-	P
MPS CS Priority	2.13.120	-	-	-	C	-	-	P
MPS EPS Priority	2.13.121	C	-	-	C	-	-	P
LIPA Permission	2.13.122	C	-	C	C	-	-	P
LIPA Allowed VPLMN List	2.13.123	C	-	-	-	-	-	P
VPLMN LIPA Allowed	2.13.124	-	-	C	C	-	-	P
Relay Node Indicator	2.13.125	C	-	-	C	-	-	P
Higher bitrates than 16Mbps flag	2.13.127	-	-	C	-	-	-	T
H(e)NB Local IP Address	2.13.131	-	-	C	C	-	C	T
H(e)NB UDP Port Number	2.13.132	-	-	C	C	-	C	T
MME/S4 SGSN Identifier	2.13.134	-	-	-	-	C	C	T
SGW node name	2.13.135	-	-	C	C	-	-	T
Co-located GGSN-PGW FQDN	2.13.136	-	-	C (see note 6)	C (see note	-	-	T

PARAMETER	Subclause	HSS	VLR (see note3)	S4- SGSN	MME	S-GW	PDN- GW	TYPE
					6)			
GERAN Cell Identity Age	2.13.137	-	-	C	-	-	-	T
UTRAN Service Area Identity Age	2.13.138	-	-	C	-	-	-	T
Homogeneous Support of IMS Voice over PS Sessions	2.13.141	C	-	C	C	-	-	T
Signalling Priority Indication	2.13.142	-	-	C	C	C	C	T
Restoration Priority	2.13.143	C	-	C	C	-	-	P
Presence Reporting Area Action	2.13.145	-	-	C	C	-	C	T
WLAN offloadability	2.13.146	C	-	C	C	-	-	P
Expected UE Activity Behaviour	2.13.147.2	-	-	-	C	-	-	T
Expected HO Interval	2.13.147.3	-	-	-	C	-	-	T
Active Time Value for PSM	2.13.148	-	-	C	C	-	-	T
Origination Time Stamp	2.13.149	-	-	-	-	-	C	T
DL Data Buffer Expiration Time	2.13.150	-	-	C	C	C	-	T
DL Buffering Suggested Packet Count	2.13.151	C	-	C	C	-	-	P
Notify-on-available-after-DDN- failure flag	2.13.152	-	-	C	C	-	-	T
IMSI-Group Identifier List	2.13.153	C	-	C	C	-	-	P
UE Usage Type	2.13.154	C	-	C	C	-	-	P
Remote UE Contexts	2.13.156	-	-	-	C	C	C	T
Extended idle mode DRX parameters	2.13.157	C	-	C	C	-	-	P/T (see note 7)
Delay Tolerant Connection Indication	2.13.158	-	-	C	C	-	C	P
Pending Network Initiated PDN Connection Signalling Indication	2.13.159	-	-	C	C	.	-	T
UE Radio Capability for Paging information	2.13.160	-	-	-	C	-	-	T
Information on Recommended Cells and ENBs for Paging	2.13.161	-	-	-	C	-	-	T
Paging Attempt Count	2.13.162	-	-	-	C	-	-	T
User Plane Integrity Protection Indicator	2.13.163	C	-	C	-	-	-	P
Non-IP-PDN-Type-Indicator	2.13.164	C	-	-	C	-	-	P
Non-IP-Data-Delivery-Mechanism	2.13.165	C	-	-	C	-	-	P
SCEF-ID	2.13.166	C	-	-	C	-	-	P
PDN Type	2.13.167	C	-	C	C	C	C	P
PDN-Connection-Restricted flag	2.13.168	C	-	-	C	-	-	P
Preferred-Data-Mode	2.13.169	C	-	-	C	-	-	P
IOV_updates counter	2.13.170	-	-	C	-	-	-	T
Dedicated Core Network Identifier	2.13.172	-	-	C	C	-	-	T
Service Gap Time	2.13.174	C	-	-	C	-	-	P
Privacy Exception List	2.16.1.1	C	-	C	-	-	-	P
GMLC Numbers	2.16.1.2	C	-	C	-	-	-	P
MO-LR List	2.16.1.3	C	-	C	-	-	-	P
Service Types	2.16.1.4	C	-	C	-	-	-	P
Broadcast Location Assistance Data Types	2.16.7.1	C	-	-	C	-	-	P
Subscribed Charging Characteristics	2.19.1	C	-	C	C	-	-	P
ICS Indicator	2.20.1	C	C	C	C	-	-	P
STN-SR	2.21.1	C	-	C	C	-	-	T
UE SRVCC Capability	2.21.2	C	-	C	C	-	-	T
Subscribed vSRVCC	2.21.3	C	-	-	C	-	-	P
Additional MSISDN	3.1.16	C	-	C	C	-	-	P
NOTE 1: This parameter is relevant in the MME only when the SGs interface is installed.								
NOTE 2: Only is applicable if SGs interface is installed. It only indicates EPS related data to be stored and is only relevant to EPS subscribers registered in VLR.								
NOTE 3: The VLR column is applicable if SGs/Sv interface is installed. It only indicates EPS related data to be stored and is only relevant to EPS subscribers registered in VLR.								
NOTE 4: If Static IP address allocation provisioned in the subscriber profile in the HSS is chosen,								

PARAMETER	Subclause	HSS	VLR (see note3)	S4- SGSN	MME	S-GW	PDN- GW	TYPE
PDN address is permanent data. NOTE 5: Only is applicable if Gs interface is installed. It only indicates EPS related data to be stored and is only relevant to EPS subscribers registered in VLR. NOTE 6: The MME/S4 SGSN stores either the PDN GW identity or the Co-located GGSN-PGW FQDN since they are identical information. NOTE 7: The eDRX cycle length may be stored in HSS as a subscribed parameter, and in that case, it is permanent data.								

For special condition of storage see in clause 2. See clause 4 for explanation of M, C, T and P in table 5.2A-1.

Table 5.2A-2: Overview of data used for PS Network Access Mode (EPS non 3GPP access)

PARAMETER	Subclause	HSS	MME	S-GW	PDN-GW	ePDG	3GPP AAA server	3GPP AAA server Proxy	TYPE
IMSI	2.1.1.1	M	C	C	C	C	-	-	P
IMSI Unauthenticated indicator	2.1.1.3	-	C	C	C	C	-	-	T
International MS ISDN number	2.1.2	C	C	C	C	C	C	-	P
IMEI	2.1.9	C	-	-	C	C	C	-	T
RAND, XRES, CK, IK, AUTN	2.3.2	M	-	-	-	-	M	-	T
RAND, XRES, KASME, AUTN	2.3.2	M	-	-	-	-	M	-	T
Access Network Identity	2.3.8	C	-	-	-	-	C	-	T
Trace Reference 2	2.11.9	C	-	-	C	-	C	-	P
Trace depth	2.11.10	C	-	-	C	-	C	-	P
List of NE types to trace	2.11.11	C	-	-	-	-	C	-	P
Triggering events	2.11.12	C	-	-	C	-	C	-	P
List of interfaces to trace	2.11.13	C	-	-	C	-	C	-	P
IP address of Trace Collection Entity	2.11.14	C	-	-	C	-	C	-	P
APN-Configuration-Profile	2.13.31	M	-	-	C	C	C	-	T
Subscribed APN-AMBR	2.13.32	M	-	-	C	C	C	-	P
Used APN-AMBR	2.13.32A	-	-	-	C	-	-	-	T
ME Identity (IMEISV)	2.13.35	C	-	-	C	C	C	-	T
PDN Address	2.13.39	C	-	C	C	C	C	-	T/P (see Note)
VPLMN Address Allowed	2.13.40	M	C	-	-	C	C	-	P
PDN GW identity	2.13.41	M	C	-	-	C	C	-	P
APN in use	2.13.44	-	-	-	C	C	-	-	T
EPS Bearer ID	2.13.66	-	-	-	C	C	-	-	T
EPS Bearer QoS	2.13.67	-	-	-	C	C	-	-	T
EPS PDN Connection Charging Characteristics	2.13.71	C	-	-	C	C	C	-	P
RAT Type (Access Type)	2.13.75	C	-	C	C	C	C	-	T
Permanent User Identity	2.13.79	M	-	M	M	M	M	-	P
Mobility Capabilities	2.13.80	-	-	-	M	C	C	-	T
MAG IP address	2.13.81	-	-	-	-	-	C	-	T
Visited Network Identifier	2.13.82	C	-	-	C	C	C	-	T
EAP payload	2.13.83	-	-	-	-	-	C	-	P
MIP Subscriber profile	2.13.86	M	-	-	M	-	-	-	P
Uplink S5 GRE Key	2.13.87	-	C	C	C	-	-	-	T
Downlink S5 GRE Key	2.13.88	-	-	C	C	-	-	-	T
Uplink S8 GRE Key	2.13.89	-	C	C	C	-	-	-	T
Downlink S8 GRE Key	2.13.90	-	-	C	C	-	-	-	T
S2a GRE Keys	2.13.91	-	-	C	C	-	-	-	T
S2b GRE Keys	2.13.92	-	-	C	C	C	-	-	T
Mobile Node Identifier	2.13.93	-	-	C	C	-	-	-	T
IPv4 Default Router Address	2.13.94	-	-	C	C	-	-	-	T
Link-local address	2.13.95	-	-	C	C	-	-	-	T
Non 3GPP User Data	2.13.96	C	-	-	-	C	C	-	
3GPP AAA Server Identity	2.13.97	C	-	-	C	C	-	-	T
Selected IP mobility mode	2.13.98	-	-	-	C	C	C	-	T
Diameter Server Identity of HSS	2.13.99	-	C	-	-	-	C	-	T
Unauthenticated IMSI	2.13.110	-	-	C	C	-	-	-	T
PDN Connection ID	2.13.111	-	-	C	C	C	-	-	T
SIPTO Permission	2.13.114	C	-	-	-	-	C	-	P
ePDG F-TEID for S2b (control plane)	2.13.116	-	-	-	C	C	-	-	T
ePDG F-TEID for S2b (user plane)	2.13.117	-	-	-	C	C	-	-	T
PGW F-TEID for S2b (control plane)	2.13.118	-	-	-	C	C	-	-	T
PGW F-TEID for S2b (user plane)	2.13.119	-	-	-	C	C	-	-	T
Restricted RAT Types	2.13.126	C	-	-	-	-	C	-	P
UE Local IP Address	2.13.129	-	-	-	-	C	-	-	T

PARAMETER	Subclause	HSS	MME	S-GW	PDN-GW	ePDG	3GPP AAA server	3GPP AAA server Proxy	TYPE
UE UDP Port Number	2.13.130	-	-	-	-	C	-	-	T
Default APN for Trusted WLAN	2.13.139	C	-	-	-	-	C	-	P
Access Information for Trusted WLAN	2.13.140	C	-	-	-	-	C	-	P
Origination Time Stamp	2.13.149	-	-	-	C	-	C	-	T
Emergency Indication	2.13.155	-	-	-	-	C	C	C	T
Emergency Info	2.13.171	C	C	-	-	C	C	-	T
Subscribed Charging Characteristics	2.19.1	M	-	-	-	C	C	-	P
ERP-Authorization	2.24.2	C	-	-	-	-	C	-	P
ERP Keying Material	2.24.3	-	-	-	-	-	C	C	T
ERP-Realm	2.24.4	-	-	-	-	-	C	C	P
Master session Key	3.11.3. 5	-	-	-	C	C	C	-	T
NOTE: If Static IP address allocation provisioned in the subscriber profile in the HSS is chosen, PDN address is permanent data.									

For special condition of storage see in clause 2. See clause 4 for explanation of M, C, T and P in table 5.2.A-2.

Table 5.2.A-3 contains additional parameter to be hold when optimised handover to 3GPP2 is supported.

Table 5.2A-3: Overview of data used for PS Network Access Mode (optimized handover to 3GPP2)

PARAMETER	Subclause	HSS	MME	S-GW	PDN-GW	ePDG	3GPP AAA server	3GPP AAA server Proxy	TYPE
Access Restriction Data	2.4.18	C	C	-	-	-	-	-	P
Barring of Packet Oriented Services	2.8.2.8	C	C	-	-	-	-	-	P
RAT Type	2.13.75	C	-	-	-	-	-	-	T
S101 HRPD access node IP address	2.13.76	-	C	-	-	-	-	-	T
S103 Forwarding Address	2.13.77	-	C	C	-	-	-	-	T
S103 GRE key(s)	2.13.78	-	C	C	-	-	-	-	T

NOTE: A UE may be simultaneously attached to EPS and have simultaneously active PDN connections or IP flows via different access systems (3GPP access and a non 3GPP access).